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out taking account of some historic data of invasions), that there exist among the Portuguese two dolichocephalic and three mesati-cephalic types of people. Traz-os-Montes population represents one of the dolichocephalic types and that of Beira Alta the other. The population of Minho has been modified by Celtic invasion.

The whole article leaves much to be desired, if not criticised. The data are not always ample enough, even if admitted as homogeneous. The conclusions, and there are many besides those mentioned above, lack a much needed, more-sided, individual corroboration. Nor is the wording always careful enough; the definite term brachycephaly is employed loosely, and so is, to a certain extent, that of mesorhyny.

A. H.

BOTANY.

Leaves of English Forest Trees.¹—This volume forms the second in the author's series of works on forest trees. It is devoted to an extended treatment of the leaf from several standpoints.

Part I of the book is general and concerns itself with the anatomy, morphology, and physiology of the leaf in an elementary way. The subjects of phyllotaxy and venation are given a brief, but lucid treatment. The relation of different forms of leaves to each other is explained by the aid of a few simple mathematical figures. The cell structure of the leaf is treated in a very popular, almost superficial manner. Part of this treatment is very good, but the author endeavors to make it plain by the introduction of dangerously broad analogies.

In describing the physiology of the leaf, the author carries his similies beyond all bounds of necessity or reason. In explaining the processes of metabolism, he attempts to make them realistic by describing the grotesque experiences of an imaginary "traveller" in the tissue of the leaf. After reading the adventures of this traveller during the night, we have the following vivid account of his experiences during the time of day when photosynthesis is going on (p. 92): "In addition to the bombardments of the rushing molecules, our traveller in the passages would also probably perceive violent

¹ Ward, H. Marshall. *Trees. A Handbook of Forest-Botany for the Woodlands and the Laboratory. Vol. II. Leaves.* Cambridge University Press, 1904. 12mo, 348 pp., illustrated.

explosions in the cells as molecule after molecule of carbon-dioxide was torn asunder by the chlorophyll machinery, and would feel or see the walls of the cells heaving in huge oscillations as the moving protoplasmic contents and cell-sap surged under the stress of the chemical forces at work, or of the physical displacements due to the rupture of the molecules and the clashing together of atoms in the course of reconstruction into new groupings."

It is extremely doubtful if the student of forestry, for whom this book is intended, will be helped by such fanciful or roundabout descriptions of important phenomena. If forestry is to be taken seriously, there is no reason why the actual facts should be dressed in such grotesque language. In many ways, however, the discussion is unusually good. The chief error is an apparent overstraining to simplify the subject.

Part 2 of the book is special and is devoted to an analytical key of English forest trees based entirely on the character of the leaves. The descriptions are written with admirable completeness and are unmistakably plain. Although such an analysis throws strangely unlike things together, there is no reason why it should not prove very useful.

The book is one for the amateur student of forestry, but will only be of incidental value to the scientific student.

H. S. R.

Finer Structure of Commercial Timbers.¹—The object of this book is to enable one to identify commercial woods without the bark, leaves, flowers, or fruit of the tree. The author describes two hundred and forty-seven of the principal commercial timbers of the world. While the descriptions are primarily intended for trade purposes, they will also be of value to the student of microscopic anatomy.

The timbers of trees are arranged in genera and families according to the system of Bentham and Hooker. The following characters are noted for each wood: common names; sources of supply; physical characters (weight per cubic foot, hardness, smell, taste, alcoholic and aqueous solutions, inflammability); grain; bark; uses; color; anatomical characters (pores, rays, rings, pith, etc., in transverse, radial, and longitudinal sections); location of type specimens; and authorities.

¹ Stone, Herbert. *The Timbers of Commerce and their Identification*. London, Wm. Rider & Son, 1904. 8vo, 311 + xxxviii pp., illustrated with 186 photographs by Arthur Deane.